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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,686	12/27/2006	Jin Ho Choy	1751-405	4723
6449 7590 08/14/2009 ROTHWELL, FIGG, ERNST & MANBECK, P.C. 1425 K STREET, N.W. SUITE 800 WASHINGTON, DC 20005				
EXAMINER LEE, REBECCA Y				
ART UNIT 1793		PAPER NUMBER		
NOTIFICATION DATE 08/14/2009		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

### Office Action Summary

**Application No.**

10/595,686

**Applicant(s)**

CHOY ET AL.

**Examiner**

REBECCA LEE

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-7, 10 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-7, 10, 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

Claims 3, 8-9 and 11-12 are cancelled. Claims 1-2, 4-7, 10 and 13 are pending where claims 1-2 are amended by incorporating original claims 8 and 11, and claim 4-5, 10 and 13 are amended.

### ***Status of Previous Rejections***

The rejection of claims 9 and 12 under U.S.C. 112, first paragraph is withdrawn in view of the amendment filed 06/09/09.

The rejection of claim 5 under U.S.C. 112, second paragraph is withdrawn in view of the amendment filed 06/09/09.

The U.S.C. 103(a) rejections of claims 1-2, 4-7, 10 and 13 (with original claims 8 and 11 incorporated into instant claims 1-2) have been maintained.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tian et al. ("Biomimetic Arrays of Oriented helical ZnO nanorods and Columns", JACS, 2002, 124, 12954-12955) in view of Boyle et al. ("Novel low temperature solution deposition of perpendicularly oriented rods of ZnO: substrate effects and evidence of

the importance counter-ions in the control of crystal growth", Chem. Commun, 2002, 80-81).

Tian et al. in view of Boyle et al. in applied to claims 1, 4, 6 and 10 as set forth in the 03/09/09 office action (with original claim 8 incorporated into instant claim 1).

Claims 2, 5, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tian et al. ("Biomimetic Arrays of Oriented helical ZnO nanorods and Columns", JACS, 2002, 124, 12954-12955) in view of Boyle et al. ("Novel low temperature solution deposition of perpendicularly oriented rods of ZnO: substrate effects and evidence of the importance counter-ions in the control of crystal growth", Chem. Commun, 2002, 80-81) and Ren et al. (US7294417).

Tian et al. in view of Boyle et al. and Ren et al. is applied to claims 2, 5, 7 and 13 as set forth in the 03/09/09 office action (with original claim 11 incorporated into instant claim 2).

### ***Response to Arguments***

Applicant's arguments filed 06/09/09 have been fully considered but they are not persuasive.

Applicant argues the nutrients of claims 1-2 consisting essentially of HMT or sodium citrate, while the solution in the Tian et al. contains both HMT and sodium citrate. However, the phase of "consisting essentially" allows additional components that does not materially affect the claimed invention to be present, such as the presence of

HMT and sodium citrate as taught by Tian et al. or the presence of Cl as taught by Boyle et al. In addition, claims 1-2 recites "a nutrient solution **containing** nutrients...", wherein "containing" is an open-ended transitional phrase. Therefore, the nutrient solution claimed would contain additional components besides the recited nutrients based on broadest reasonable interpretation. Thus, applicant's argument is not convincing.

Applicant then compares the X-ray diffraction pattern of the claimed ZnO nanorod array with the SEM image of the nanorod arrays of Tian et al.; and asserts unexpected results are obtained by the claimed method. The examiner would like to remind the applicant that any objective evidence such as unexpected result must be fatually supported by an appropriate affidavit or declaration to be of probative value. See *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984) and MPEP 716.01(c). Evidence of unexpected properties may be in the form of a direct or indirect comparison of the claimed invention with the closest prior art which is commensurate in scope with the claims. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP § 716.02(d) - § 716.02(e). Since the proof of fatural evidence is lacking in applicant's assertion of unexpected results, the examiner does not find the argument persuasive. In addition, applicant's comparison is not commensurate with the scope of the invention because independent claims 1-2 do not limit the substrate to be Si-wafer only which Fig 3 of the instant specification reflects ZnO nanorod on a Si substrate only.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBECCA LEE whose telephone number is (571)270-5856. The examiner can normally be reached on Monday-Friday 8:00 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ROY KING can be reached on (571)272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./  
Examiner, Art Unit 1793

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793